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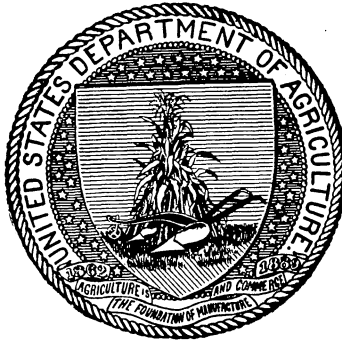
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# A SUCCESSFUL HOG AND SEED-CORN FARM.

BY

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## LETTER OF TRANSMITTAL.

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U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF PLANT INDUSTRY,  
OFFICE OF THE CHIEF,  
*Washington, D. C., October 17, 1906.*

SIR: I have the honor to transmit herewith a description of the system of management on a successful hog and seed-corn farm in the State of Illinois, prepared by Mr. W. J. Spillman, Agriculturist in Charge of Farm Management Investigations in this Bureau, and recommend that it be published as a Farmers' Bulletin.

Respectfully,

B. T. GALLOWAY,  
*Chief of Bureau.*

Hon. JAMES WILSON,  
*Secretary of Agriculture.*

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## A SUCCESSFUL HOG AND SEED-CORN FARM.

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### INTRODUCTION.

Nearly all highly successful farms are unique in their management. In the absence of a science of farm management they represent systems wrought out by men of unusual energy and intelligence, who have gone resolutely about discovering and utilizing the full possibilities of their farms. These men have been governed largely by chance in the locations chosen, and to some extent in the type of farming followed. Hence it is they are distributed here and there over nearly the entire country and represent every type of farming that can be made highly profitable. From such men, who utilize the full possibilities of their land with a given system of farming, we are learning the facts which, when properly classified, will constitute the science of farm management.

Altho such farms are widely distributed they are seldom plentiful in any section. Few men have comprehended a system of farming fully and developed it to its full possibilities. Cropping systems are seldom planned with a view to keeping the land busy and to meeting the exact requirements for highest success in the system followed. But when problems of this kind have been successfully met on a given farm, that farm becomes an object lesson of inestimable value to every farmer in the country. The lesson taught is not so much how to work to a given system as it is how to meet the problems that present themselves. Such farms demonstrate the great value of intelligent management as compared with hard work applied unintelligently. Their success, when the cause of it is understood, lends encouragement to other intelligent men.

### THE SYSTEM OF MANAGEMENT.

The farm here described is that of Mr. W. H. Rowe. It is located in west-central Illinois, on dark prairie loam, and is devoted to hog raising and the production of fine seed corn. For roughage the hogs are provided with clover pasture in summer and soy bean or clover hay in winter. They are fed grain every day in the year. Before the business of growing seed corn was undertaken the amount of corn

raised was nearly sufficient for the needs of the farm. At present a considerable quantity of grain and mill feed is bought to replace the seed corn sold and to supply the demands made by the increased number of stock kept.

The cropping system followed for several years past is as follows: (1) Corn (four-fifths) and soy beans (one-fifth); (2) corn; (3) oats; (4) clover.

Eighty acres of land in 4 equal fields are devoted to this rotation. The soy beans are cut for hay, which is fed to the hogs in winter. The clover is used for hog pasture. The oats are used as feed for the work stock and hogs. What hay is needed is bought. Not much is needed, however, in addition to the soy-bean hay, corn stover, and sheaf oats or oat straw produced on the farm. Last year 450 bushels of seed corn were sold at an average price of \$1.82 per bushel. The remainder of the crop is fed, any deficiency being made up by purchase.

This system has been in vogue without essential change for ten years. Adjacent land, poorly managed, produces probably 35 bushels of corn per acre. During the past four years the average yield of corn on this farm has been 80½ bushels per acre. During the past few years oats have lodged more or less, and Mr. Rowe is seeking a substitute for this crop.<sup>a</sup>

The yield of oats this year was 50 bushels per acre. On another similar farm owned by Mr. Rowe the yield was 63 bushels. The oats on the home farm were pastured to some extent this spring, because of a partial failure of the clover pastures. No commercial fertilizers have been used until this year, when a carload of ground phosphate rock was bought. It would seem that the system of cropping and the use made of these crops have so added to the nitrogen content of the soil as to render the plant food supply somewhat unbalanced for oats, tho not for corn, as the corn crop can utilize the nitrogen to better advantage than oats.

The 80 acres are divided into 4 equal fields, all fenced hog tight. The fences consist of 5-foot woven wire, with a barbed wire above it around part of the farm. The 4 fields meet at the center of the farm, where there is a well, a small feed yard for use in winter, and a shed for storing feeding troughs, etc., in summer. The feed yard is partially floored so that the hogs may eat without standing in mud during unfavorable weather in winter.

In addition to the 80 acres in the rotation, there are 31 acres of timber, 10 acres of permanent bluegrass sod (for 5 horses, 2 cows, and the brood sows in winter), and 10 acres devoted to orchard, garden, yards, and barn lot, making 131 acres in all.

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<sup>a</sup>See proposed change in the cropping system, p. 13.

Fifteen brood sows are kept. These are well-bred Duroc-Jerseys, a breed especially adapted to the production of large, late-maturing hogs. These sows farrow once a year, early in April, or after danger of severe winter weather is past. They raise 8 pigs to the litter on the average. In spring the 20-acre clover field is divided into 2 parts by means of a temporary wire fence 30 inches high. One part contains 12 acres and the other 8. One hundred and twenty yearling hogs, weighing about 200 pounds each, are placed in the 12-acre inclosure in early spring and remain until they are sent to market about August 1 to 10. The 15 sows and 120 pigs are turned into the 8-acre division, where they remain till the large hogs on the 12-acre division are marketed, when they are allowed the run of the whole 20 acres.

At first each sow and her litter receives 3 pounds of corn a day. Sometimes a little oats is substituted for part of the corn. The amount of grain is gradually increased until by fall each sow and litter receives about 17 pounds a day. The sows are allowed to wean the pigs of their own accord. At one side of the field a pen is constructed in such manner as to admit the pigs but not the sows (fig. 1, B), and the pigs may thus be fed separately so as to insure their getting a proper share of the feed. By the end of summer the pigs weigh about 100 to 125 pounds each, most of this gain being due to clover.

On the approach of winter the sows are removed to the bluegrass pasture previously mentioned, where they are confined on 2 acres of land, with suitable shelters provided. The pigs are then penned on about 4 acres of the clover sod next the central well. The shelters which stood in the field during summer are moved to this pen.

The brood sows are fed in winter about 4 pounds a day of mixt grains. Last winter this consisted of ground rye, shorts, oil meal, and corn. In the absence of rye, bran is used. They are also fed clover hay, a small crop of which is cut from the clover pastures. This amount of feed keeps them in thrifty condition, but does not fatten them.

The pigs in winter are fed soy-bean hay and an average of about 5 pounds of grain per head per day. During a portion of the time this grain consists of a mixture of about  $3\frac{1}{2}$  pounds of corn,  $\frac{1}{2}$  pound of shorts, and  $\frac{1}{2}$  pound of oil meal per head per day. The amount fed is less in early winter and gradually increases as the pigs increase in size. By spring these pigs weigh 200 to 225 pounds each.

When clover pasture becomes available in spring these yearling hogs are turned into the 12-acre inclosure, while the sows and their new litters are given the remaining 8 acres. While the clover is at its best each of the 120 large hogs receives about  $2\frac{1}{2}$  pounds of grain daily. This amount is gradually increased until by August 1, when the large hogs are marketed, each is receiving about 4 pounds a day.



The daily average for this period is about  $3\frac{1}{2}$  pounds. When sent to market these hogs weigh 325 to 350 pounds each. They are a fine, uniform lot, and always bring top prices in their class.

One of the most interesting features of this system is the fact that the hogs are kept until they are 16 months old and reach the large size just mentioned. The reasons for this are as follows:

The clover furnishes most feed the first half of summer, and the double number of hogs on hand at this time makes it possible to utilize this growth to best advantage. Again, pigs handled as these are, if

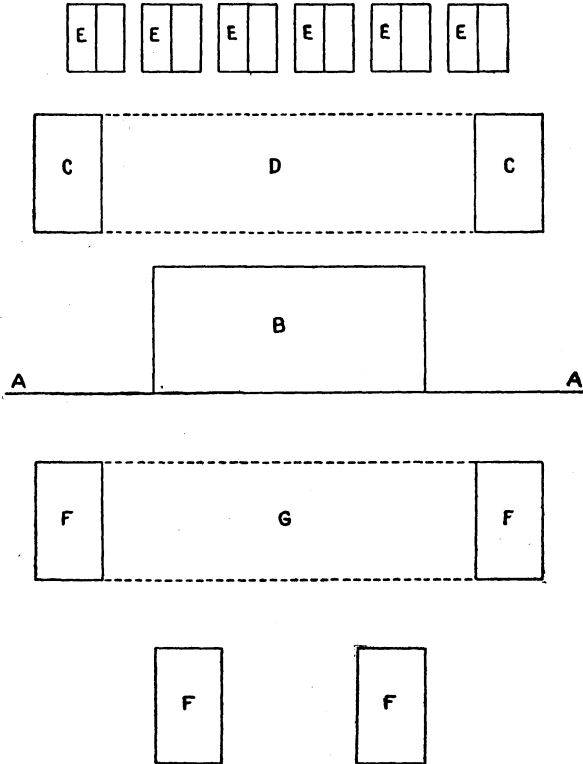


FIG. 1.—Arrangement of shelter houses in the field. A A is the partition fence that separates the yearling hogs from the sows and pigs. B is the special pen in which the small pigs get their grain. C, C are two shelter houses, 8 by 14 feet; they stand facing each other, about 70 feet apart. D is a temporary shed, covered with straw, which furnishes ample shade in hot weather. E, E, E, E, E, E are small A-shaped houses, each large enough for sleeping quarters for a sow and her litter. Most of the sows sleep in the shelters C, C, or under the open shed D. F, F are shelter houses, 8 by 14 feet, like C, C, for the yearling hogs. G is a shed similar to D.

sold at 200 pounds, will have made a large proportion of their growth during winter on expensive grain feed, while by keeping them till midsummer a larger proportion of the gain is made from clover, which is cheaper than grain. These points have received careful consideration by Mr. Rowe, and he believes he makes more profit by producing these large hogs under his system than he could make from

the same area of land by selling the hogs earlier. He is undoubtedly correct in this. However, this would not be true for sections where good winter pasture can be made available. In this case it would doubtless pay better to secure two litters of pigs a year and sell them at not much over 200 pounds weight.

When the large hogs go to market the sows and pigs are given the run of the whole 20 acres. A little later, when the oats have been removed from the field, the pigs are also allowed access to the new seeding of clover if this is rendered desirable by the condition of the older clover field.

The temporary fence between the 12 and 8 acre divisions of the clover field consists of ordinary hog wire fastened to driven posts. These posts may be set at any time during the fall or winter when the ground is in proper condition.

### SHELTERS.

The arrangement of the shelters during summer, when the hogs are on clover sod, is shown in figure 1.

During summer the grain is fed mostly in the vicinity of the shelters. If the feeding ground becomes muddy, the grain is distributed in a new place. In winter a good deal of mill stuff is fed, as previously stated ( $6\frac{1}{2}$  tons last winter). For this purpose troughs are placed on the wooden floor in the small feed lot at the center of the farm. The construction of these troughs (fig. 2) shows how carefully Mr. Rowe and his son, who has been an instructor in one of the short courses of the agricultural department of the University of Illinois, have worked out their problems. Troughs enough are provided so that for 100-pound pigs each pig has 18 inches standing room at the side of the trough. As the pigs increase in weight this allowance of space increases to 24 inches for 200-pound hogs. The center board (fig. 2, *b*) prevents the hogs from getting their feet into the troughs, but does not interfere with their eating. It also prevents fighting across the trough.

When the pigs are placed in their winter quarters (on about 4 acres of clover sod), the shelter houses are moved thither. Corn stover is used for bedding.

The larger shelters are 8 by 14 feet, 7 feet high in front and 4 feet in the rear (fig. 3). They are built on skids made of 2 by 8 inch stuff that act as sled runners and permit the buildings to be drawn from

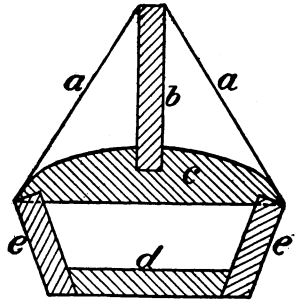


FIG. 2.—Cross section of hog trough for winter feeding. *a, a* are guy wires, which hold the 2 by 12 inch board (*b*) in place. There are three of these wires on a 16-foot trough. The crosspiece (*c*) is made from 2 by 4 inch stuff, as a support for *b*. There are five of these to each trough. The bottom of the feed box *d* is made from 2 by 12 inch material and the sides, *e, e*, from 2 by 8 inch planks.

one location to another. The skids are so attached that when they decay new ones can be put in place. The corners are braced inside to prevent racking when the buildings are moved. There are no floors, but there is a cross sill at the center which practically makes two sleeping compartments. The front is open below, with two swinging doors

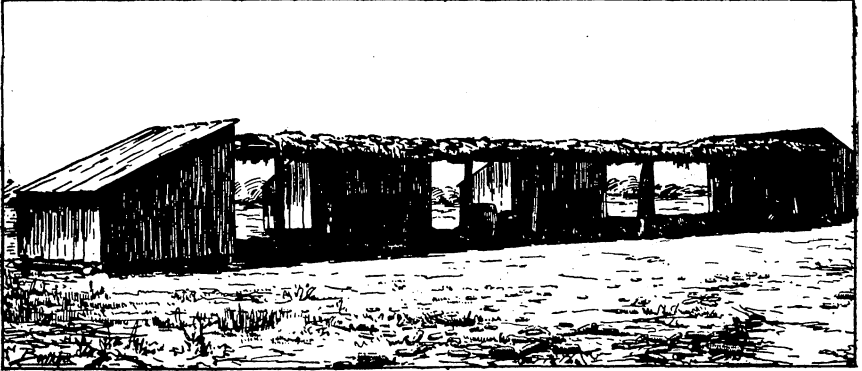


FIG. 3.—Shelters for large hogs in summer.

above that can be pushed inward and fastened to the roof in good weather, thus letting in the sunshine. In winter the houses face to the south. The walls are battened inside. To prevent the wind from overturning these shelters each building is anchored to a post driven close beside it. These structures cost about \$20 each.

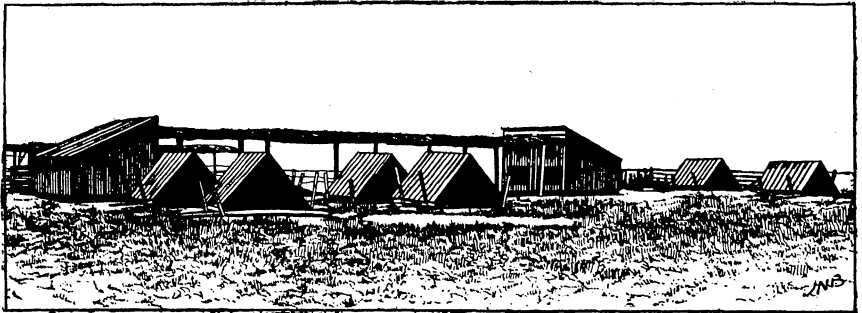


FIG. 4.—Shelters for sows and pigs in summer.

The small A-houses shown in figure 4 are  $6\frac{1}{2}$  by 8 feet in size and  $4\frac{1}{2}$  feet high. They rest on a frame of 6-inch boards, to which they are securely fastened. These boards are the only parts of the structures that are in contact with the ground, and can easily be replaced when they decay. One end of the shelter is left open. The cost of these small shelters is about \$7 each.

## WATERING DEVICE.

The device used for watering the hogs (fig. 5) is exceptionally well adapted to the purpose in the absence of a natural water supply. In fact, it is perhaps more desirable than ponds or even running streams on the score of cleanliness and decreased liability to infectious diseases. A sled large enough to hold an ordinary barrel is covered with a heavy water-tight floor and boarded up water-tight 4 inches around the edges. The barrel is provided with a large bung or wooden stopper in the upper head in order that it may readily be filled with water. A

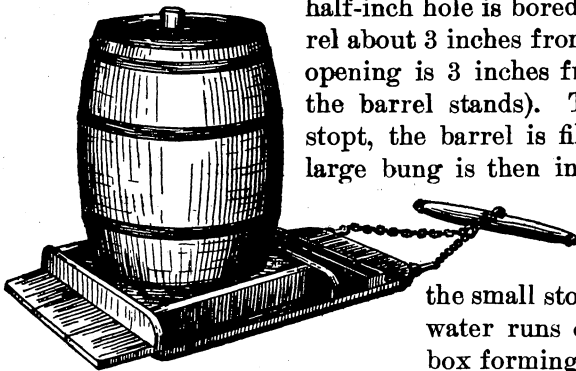


FIG. 5.—Watering device.

half-inch hole is bored in the side of the barrel about 3 inches from the bottom (i. e., the opening is 3 inches from the floor on which the barrel stands). The lower hole being stopt, the barrel is filled with water. The large bung is then inserted air-tight. The

sled is now drawn to the field, near the shelter houses, and the small stopper is removed. The water runs out, filling the shallow box forming the top of the sled to the level of the small opening in

the barrel. The hogs may drink at any corner of the box. As the water is consumed more runs out. Two such barrels are placed in each inclosure, and filled once or twice a day or as often as they become empty.

New barrels are frequently not air-tight. To remedy this defect, when the openings which admit the air are not plainly visible the barrels are given a good coat of paint. This usually stops all small crevices. If a single coat of paint does not accomplish the desired result, another is added, and so on till the barrel holds water and excludes air.

## SOY BEANS.

The practise which led to the introduction of soy beans into the cropping system is of interest. The hogs in winter are penned on about 4 acres of the clover sod. During the winter the soil of this pen, or lot, becomes more or less puddled and is rather difficult to bring into condition for a good seed bed in spring. This can be accomplished, however, by continued stirring and clod crushing. But this takes time, and necessitates late planting. Here was a need for a crop that could be planted in late spring or early summer and yet fit into the general farm scheme. Several crops were tried, and a variety

of soy bean known as the "Yellow Dwarf" was selected as most suitable for the purpose. In a letter to the writer concerning this crop Mr. Rowe says: "We have sometimes fed down our soy beans, but now we cut them to feed in winter and have them cover a long period. We grow the Yellow Dwarf, but are making some experiments with other varieties, and may change when we think we have something better. We plant in June; the first week in June is an excellent time, but there may be good reason for deferring it if the land is not in good order or is weedy. On weedy land it is best to destroy as many crops of weeds as possible before planting. We planted this year the last week in June, and the beans have matured nicely." The reader should not infer that this farm is weedy. Mr. Rowe has such an abhorrence of weeds that an acre of land having on it a dozen weeds would be considered weedy. The writer did not see a weed in the 4 acres of soy beans the latter part of July this year.

The soy beans are drilled in rows 20 inches apart, the amount of seed used per acre being one-third to one-half bushel. They are given the best of cultivation.

### CORN.

The average yield of corn on this farm for the past four years has been 80½ bushels per acre. The manner of preparing corn land and the subsequent cultivation accounts in part for this very satisfactory yield. Mr. Rowe's cornfields in July of this year were the cleanest the writer has ever seen. In preparing the land for corn, sometimes one and sometimes the other of the two methods described below is followed, depending on the condition of the soil:

**First method.**—Disk, lapping one-half; harrow; disk and harrow again in the same manner; repeat if there is time to do so.

**Second method.**—Disk, lapping one-half; break with ordinary turning plow, then harrow twice before planting.

**Cultivation.**—The following is an outline of the subsequent tillage: Harrow after planting, before the corn is up. After the corn is up, go over the land with a rotary hoe; then cultivate twice with rear shovels next the row and once with front shovels next the row. After this, cultivate between the rows with a one-horse cultivator at intervals of about two weeks till the first week in August. The cultivation should be shallow, so as not to disturb the roots of the corn. If any weeds survive this treatment they are removed with a hand hoe.

**Breeding seed corn.**—The most careful methods of breeding seed corn are practised. In the breeding plat every alternate row is detasseled to insure cross-pollination. This insures seed of high vitality on the detasseled stalks. Each year the choicest plants are selected for planting the breeding plat the next year.

## FEEDING VALUE OF EACH CROP.

Mr. Rowe believes that when fed without waste a bushel of corn will produce 10 pounds of increase in live weight in hogs; an acre of clover, 400 pounds; and an acre of soy beans, 600 pounds. This agrees fairly well with the best estimates that can be made from the data given above as to the amount of grain fed, as may be seen from what follows:

Grain and mill feed used annually:

	Pounds.
15 litters, 6½ months during summer (estimating 7 pounds a day per litter) .....	20,790
120 pigs, 5½ months during winter, at 5 pounds per day .....	100,200
120 yearlings, 120 days during summer, at 3½ pounds per day .....	50,000
Total grain and mill feed .....	<u>170,990</u>

Estimated production of pork:

170,990 pounds of corn=3,050 bushels, which, at 10 pounds of pork per bushel, would produce .....	30,530
18½ acres of clover, <sup>a</sup> at 400 pounds of pork per acre, would produce .....	7,400
4 acres of soy beans, at 600 pounds of pork per acre .....	<u>2,400</u>
Total estimated production of pork .....	40,330

Actual results in pork:

120 hogs, averaging 337 pounds .....	<u>40,440</u>
Difference in favor of actual results .....	110

The actual results are seen to differ only one-fourth of 1 per cent from the estimated total product. This shows that Mr. Rowe's estimates of the feeding value of these crops is very accurate.

## PROPOSED CHANGE IN CROPPING SYSTEM.

It has already been stated that oats are not a satisfactory crop on this farm. In a recent letter the owner says: "We think now we shall change our rotation and have one division in alfalfa, running a rotation of corn, corn, clover on three fields; or we may use soy beans and omit the clover." If alfalfa proves to be a satisfactory crop on this land, the clover can be dispensed with, as alfalfa is a better hog pasture than clover. Mr. Rowe's plan is to leave the alfalfa down as long as it thrives, then set a new field in this crop and plow up the old one. The alfalfa will thus rotate slowly around the farm without interfering with the three-year rotation.

## SUBSTITUTES USED WHEN CLOVER FAILS.

The clover fails to catch about once in five years on the average. It failed completely in 1901 and partially this year (1906). In 1901 it was replaced by rye sown in the fall, oats and rape sown in early spring, and soy beans sown in late spring. This year a light seeding

<sup>a</sup>From the 20 acres of clover 1½ is deducted for the 15 sows which made no gain.

of oats and rape was added to the clover sod. When the pastures are short, the deficiency is made up by feeding more grain.

### LABOR.

One man is hired by the year and another from spring until late fall, about nine months in all. When the temporary employee is a good hand, employment is found elsewhere for him for the winter months, so that he may be available the next year. Mr. Charles Rowe, the son of the proprietor, when at home, takes an active part in the work of the farm. This labor is not at all confined to the home farm, however, as Mr. Rowe owns three other farms. He estimates that the labor used on the home farm, in addition to that done by himself and son, amounts to about one and a half men for the year. The wages paid are \$22 a month and board.

The work stock consists of one team of mules, one team of horses, and one driving horse.

### FINANCIAL RESULTS.

During the past ten years the owner of this farm has been able to buy another similar farm of 96 acres a few miles away, paying over \$100 an acre for it. Exactly the same system has been instituted on the new farm with highly satisfactory results. This second farm is in charge of an intelligent hired man, who gets good wages and a small percentage of the profits. The owner and his son superintend both farms very closely, and the son does much of the work on the home farm. The father does his share also, but not so large a proportion of the work as he formerly did. He also owns another farm some miles away, too far to be managed directly by the owner. During the present summer an 80-acre farm near by has been added to his holdings. Eight acres of this are to be put down in permanent pasture and the remaining 72 acres divided into four equal fields, to be managed exactly like the home farm.

Last year 450 bushels of pedigreed seed corn were sold from the home farm and a like amount from one of the other farms. On a neighboring farm under Mr. Rowe's direction 200 bushels more were grown. The average price received was \$1.82 per bushel. As already stated, about 120 head of hogs are sold annually from the home farm. A like number is sold from the other farm. The average annual results from the home farm are shown in the following table:

120 hogs, at 337 pounds weight .....	pounds.. 40, 440
40,440 pounds, at 6 cents a .....	\$2, 426
450 bushels of seed corn, at \$1.82.....	819
Gross income .....	\$3, 245

<sup>a</sup> The price received this year was over 6 cents a pound live weight. With hogs at 5 cents a pound the net income would be \$1,767.

646 bushels corn, bought at 40 cents .....	\$258
6½ tons mill feed, bought at \$20 .....	127
Wages and board of 1½ men .....	576
Total outlay .....	<u>\$961</u>
Available for general expenses, family income, etc. ....	2,284

From this net income should be deducted an amount sufficient to cover insurance on buildings and loss from deterioration of buildings and other improvements, farm machinery, work horses, etc. The remainder represents (1) interest on the investment, (2) wages for the labor of Mr. Rowe and members of his family, and (3) clear profit.

It is evident that quite a large part of Mr. Rowe's success is due to the production of high-bred seed corn and the sale of the same at more than four times the price of ordinary marketable corn. This is the result of Mr. Rowe's intelligence, enterprise, and business ability. His success in this line can be duplicated by many other farmers either in the production of high-bred seed of some farm crop or in some other special line of production. However, it may be instructive to eliminate the production and sale of seed corn and see what would be his success if he restricted his efforts to hog farming.

Since Mr. Rowe is a man who understands fully the possibilities of his farm, it is fair to assume that if he depended entirely on hogs for his income he would keep as many hogs as his system of farming would permit. At present the number of hogs kept is limited by the area of clover pasture. Now, by adopting two two-year rotations of corn and clover, sowing clover in the corn at the last cultivation—a practise which is entirely feasible—he could double his area of clover pasture, thus doubling the number of hogs kept. Presumably, he would also insert 4 acres of soy beans in the other cornfield in order to have hay for winter feed. He would thus have 32 acres for corn on which he would produce 2,560 bushels. As he would need 6,152 bushels for feeding his hogs, it would be necessary for him to buy 3,592 bushels. Figuring the financial results on this basis, we have the following:

Hogs, 240, averaging 337 pounds, or 80,880 pounds, live weight, at 6 cents per pound .....	\$4,852.00
Corn bought, 3,592 bushels, at 40 cents .....	\$1,436.80
Mill feed bought, 12½ tons, at \$20 .....	254.00
Wages and board of 2 hands .....	768.00
Total outlay .....	<u>2,458.80</u>
Net income .....	2,393.20

It is here seen that the net profit would be slightly larger than under the system actually in vogue. In discussing this point with the owner of the farm, it developed that the reason why the system just outlined is not followed is the ever-present danger from hog cholera. Because of occasional losses from this disease the system which includes the



production of seed corn would, Mr. Rowe believes, in the long run prove to be more profitable than the one in which hogs represent the sole source of income.

### CONCLUSION.

There is much satisfaction in contemplating the methods and results on this farm. The influence of the agricultural college is distinctly seen. Sound judgment and good management are apparent. Presumably, every farm in the United States, barring differences in soils, could be made as profitable if all our farmers knew how to farm as well and had the necessary executive ability. The object of this and other similar articles is to aid in giving others a knowledge of the essential details of management required for such success. Unfortunately executive ability can not so easily be acquired; yet there are thousands of farmers who are to-day running unprofitable farms who lack only the knowledge of how to farm in order to succeed as this farmer has.

The one ever-present element of danger in hog raising is the liability of loss from cholera. The farm described has met such losses. During the present year only 90 hogs were sold from each of the farms because the numbers had recently been depleted by cholera. This disease is probably carried from farm to farm by farmers themselves as often as in any other manner. In a field or lot of sick hogs the soil becomes infested with the germs. These are carried on men's shoes, on wagon tires, and in other similar ways from one farm to another. Strict quarantine will frequently carry a herd of hogs safely thru an epidemic of cholera, but there is at present no satisfactory way of avoiding this disease. The farmer who depends largely on hogs for his income must therefore be prepared to meet occasional losses from this cause.